China through the Telescope

A Southwestern perspective on Contemporary China

6th Seminar, 10 April 2017

Knowledge transfer from Public Research in Italy

The experience of Netval

Experts Roundtable

One definition for technology is the use of scientific knowledge to solve practical problems, especially in industry and commerce. When new technologies provide users better performances at a lower price than before, they possess a sustainable competitive advantage, and their commercialisation represents a good sold in the market. This is what we define a successful technology transfer. Technology transfer (TT) is a key driver in today's economy, which is why knowledge transfer process is watched closely by public and private sector.

To discuss the process of knowledge transfer from public research, its deliverables and obstacles, GGII was pleased to welcome Andrea Piccaluga, Professor of Management and Delegate for TT of Sant'Anna School of Advanced Studies, and President of the Italian Network for the Valorisation of Public Research (Netval). As discussant at the roundtable, to highlight the potential synergies between Italy and China, GGII gladly invited Mr Lorenzo Gonzo, Scientific Councillor of the Consulate General of Italy in Chongqing. Among the participants, representatives of the Science and Technology Commission of Chongqing Municipality, of different Schools of Chongqing University, Institute of Green and Intelligent Technology of CAS, Chongqing Zhaoguang Science and Technology Joint-Stock Company, and other key local enterprises. The seminar was chaired by Alberto Di Minin, Professor of Management of Sant'Anna School of Advanced Studies and GGII Director.

Which outputs should we expect from knowledge transfer activities originating from public research? This question was the starting point of our 6th China through the Telescope seminar. As Professor Piccaluga outlined, the outputs would normally include the establishment of collaborative research projects and contract research with companies, the creation of new companies by university professors and students, patents to be sold to companies, and university-industry joint laboratories.

With regards to Italy, the current situation shows our country is not well positioned in terms of number of researchers, yet good performances are provided when analysing both quantity and quality of scientific research, thus including scientific publications. Taking into consideration the collaboration between university and industry, Italy is again not well positioned, especially in relation with small-sized firms.

Professor Piccaluga described the Italian scenario for technology transfer (TT) activities: because of the Italian academic evaluation system, university professors are expected to regularly publish papers and articles; if new inventions come up from their work, professors have the right to own the resulting intellectual property. Every Italian university has a TT office, where, on average, four people are employed; researchers and professors are allowed to start new companies and own shares, whereas Italian universities normally do not own shares in the new companies. The presence of investors, such as venture capital companies is lower than the demand.

Netval Members

Against this background, Netval was set up in 2002 with a bottom up approach: it was born as the network connecting all the TT offices of Italian universities and research centres, and was then transformed into an association in 2007. The initiative of setting up this new entity was taken directly by people in charge of TT in the education and research realms, with the aim of improving cooperation and coordination among the different TT offices. The Minister of University, Research and Education provided then its endorsement to Netval, yet was not involved in early stages. At present, Netval represents a well-developed network of a variety of different entities – universities, public research organizations, hospitals, … - all of which carry on research which needs to be transferred.

56 universities, 8 PROs, 3 IRCCS
57% of Italian Univerisities
69,1% of Italian students
76% of university professors
7 new members in 2016

The main objective of Netval is to connect different organizations and people, and universities with companies. The goal is the valorisation of the outputs resulting from research work carried on by the

organisations who are part of Netval, within the innovation ecosystem made of companies, institutions, venture capitalists, regional governments, ministries, etc.

To reach this goal, an important aspect is TT education, and the promotion of its tools and practices. Technology transfer is not easy to realise, but it can be taught, and universities can share their best practises to be taken as models. Moreover, Netval aims at establishing institutional links at international level, such as what is now happening with Chongqing University.

Drawing experience from successful TT cases, Netval is trying to help more and more researchers to succeed. Some examples were illustrated.

Some researchers at the University of Foggia invented a method to make gluten not harmful for allergic people. The technology transfer office of the university was able to get into contact with a private company investing for the patent, thanks also to the good communications between TT managers and researchers. Notwithstanding the small size of the university, the TT office was ready to support the good work of researchers.

Another good example comes from a group of undergraduate students, who are now potential entrepreneurs. They managed to set up a high-tech company, which is now trying to compete at international level. This was realised with the help of TT office of Sant'Anna School of Advanced Studies.

In the case of university of Parma, the university also made profits by selling its shares. A team of researchers dealing with technologies for driverless car, after numerous years of work, was finally able to set up a private company with the help of the TT office of the university, and successfully sold it to a US company gaining a good profit.

University of Udine provides an interesting example related to a research on yellow kiwis with special vitamins and physiological characteristics. In this case, the university provided specific legal and managerial competences: the TT office protected the intellectual property, made a grant, and sold the technology to a South African company.

Netval also collects data and publish statistics about technology transfer activities in Italian universities and public research organisations every year. As Professor Piccaluga said, in Italy TT offices, patents, spin-offs are under constant increase, but there is still room for great improvements.

265	Professionals (+140%)
56	Technology Transfer Offices (+180%)
3,115	Active Patent Portfolio (+162%)
	260 granted patent/year
	260 new patent/year
1,254	Spin-off Portfolio (+ 120/year)

Sharing experiences and competences is a matter of key importance for knowledge transfer, and Netval creates the opportunity to do so by connecting people and teaching best practices. Professors, technology transfer managers and those working in administration offices must work together and have a direct link.

A false myth, is that private companies prefer universities not to be involved in patents of its researchers. This does not reflect reality, as a university which takes care of intellectual property proves to be a

professional interface to work with. Also, TT offices must act as opportunity generators, problem solvers, and makes TT appealing, because no one can be obliged to get involved in it.

Students are to be considered as entrepreneurs, their capabilities are constantly increasing and their chances to succeed are improving year by year. It is important to teach them knowledge transfer and entrepreneurship, notwithstanding their specific specialisation, and to help them with networking: the sooner they make an attempt, the sooners they will succeed.

Professor Piccaluga continued making a few considerations about professors: they tend not to abandon their academic activities, which means that they happen to be professors and entrepreneurs at the same time, which can be a critical combination. Since university professors are generally very committed to publish new articles, they normally do not give too much attention to technology transfer. Moreover, TT offices must take different approaches according to the different situations and different interfaces.

In relation to university organisations and activities of technology transfer, one must remember that existing rules and bureaucracy can be very complex and even represent an obstacle to TT. For this reason the objective of technology transfer must always be clearly defined with a top down governance approach, to ensure that the whole leadership is aligned. Furthermore, technology transfer managers need time to learn the job, adequate resources and staff are needed, together with a large number of attempts.

Professor Piccaluga concluded with some personal remarks, saying that sometimes universities' presidents have very high expectation about TT, hoping to make great profits by selling patents and new companies, but this happens pretty seldom. The main objective of TT should be to transfer as many resources as possible from public research to companies, so they can grow and foster regional economic development.

According to Lorenzo Gonzo, Italy is doing giant leaps towards the creation of new companies and spin offs originated from universities. Besides universities, research institutes are in Italy under direct control of the Minister of Education, and follows slightly different regulations for technology transfer, as intellectual property belongs to the institutes themselves and might be given or licenced to the researchers to create spin offs at a later stage.

Overall, Italy is performing well in building new spin-off companies, the increase rate of which is quite high. Mr Gonzo remarked that it is important to split different tasks to different people: researchers are supposed to develop scientific results, while TT managers should take care of the creation of efficient spin-offs and related aspects. In this way, spin-offs will have more chances to go through the whole process and succeed.

Q&A session

Questions were asked about how the network of Netval is able to facilitate the whole process of technology transfer, how it is funded, and whether it has a role in connecting ecosystems of innovation, not only within Italian borders, but also with foreign countries.

Fifteen years ago, when Netval was established, Italian professors and TT managers were not well prepared to handle the whole process of TT by themselves, and probably the ideal solution would have been for the Minister of Education to take the lead and organise them into a structured network. But this was not the case, therefore they decided to take the initiative themselves, with a bottom up approach.

Netval is funded by little contributions coming from the involved entities, utilised to employ a small number of administrative staff to run the basic activities, while many professors do volunteer job to sustain the network. From time to time, other organisations, companies, or associations are established thanks to funds coming from the Minister, however they normally disappear as the budget provided comes to an end. Netval's approach is meant to make the association sustainable in the long run employing little money.

As of the contribution of Netval in making TT successful, Prof Piccaluga said that the cases which proved successful were not only because of Netval's merit, but the result of different factors, such as very bright students, support from university, efficient incubators, science parks… many ingredients make for the recipe to bring positive outcomes. Yet, in every one of these cases, Netval gave its contribution in terms of well-trained managers, or a course taught to the students, or because it helped in establishing good connections between students and companies, etc.

With regards to the role played by researchers and professors in spin-off companies, in the past professors used to try to set up and manage their own companies, but this is a model of the past. The recent trend is to share responsibilities: professors develop ideas and act like scientific advisors, while their PhD students or researchers are the real entrepreneurs and work in the companies on a daily basis.

A country like Italy needs important international networks, which can be obtained in different ways. Italian universities and public research organisations can rely on the support of our ministries, the network of embassies and consulates, and networks of institutions for external trade supporting the activities of universities and start-up companies. Concurrently, individual members on Netval can share their personal contacts with international professors, universities, technology transfer managers. Particularly good contacts with the equivalents of Netval are established in countries like Israel, Iran, US, and hopefully China in the near future. Thanks to the good contacts already in place with these networks, selling a patent or finding a partner in these countries for an Italian universities is relatively easy.